

Digital Technologies - Above satisfactory - Years 3 and 4

Portfolio summary

This portfolio of student work shows that the student can describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes (WS1). The student explains how the same data sets can be represented in different ways (WS2).

The student defines simple problems and designs and implements digital solutions using algorithms that involve decision-making and user input (WS3). The student explains how the solutions meet their purposes (WS3) and collects and manipulates different data when creating information and digital solutions (WS2). The student safely uses and manages information systems for identified needs using agreed protocols (WS3) and describes how information systems are used (WS1).

Worksheet: Digital systems

Sample summary

Students have been collaborating, creating and communicating ideas, information and solutions face-to-face and online via a class wiki. They were asked to identify hardware and software used throughout the year and describe other purposes for which they can be used, and to sequence the steps to upload their file to their learning management system folder.

Achievement standard

Subject

Learning Area

By the end of Year 4, students describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. They explain how the same data sets can be represented in different ways.

Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. They explain how the solutions meet their purposes. They collect and manipulate different data when creating information and digital solutions. They safely use and manage information systems for identified needs using agreed protocols and describe how information systems are used.

Systems worksheet



DIGITAL SYSTEMS

1. Think about the information reports, data collection, presentations and wiki you have made this year using digital technologies. Remember your plant life cycle, interviewing a grandparent, recording data on rubbish in the playground.
2. Complete the table below.

Hardware and peripheral devices

Name of hardware/device	What did this hardware help you do?	What else can this hardware help you do?
Keyboard	It helps me type my report.	I can use it to add up numbers.
Video camera	I used it to record my interview with Nan. I can hear what she said.	I can use it to show how I made my push pull toy and how it works.
Printer	I printed my story and made a book.	I print photos and Miss R prints signs.

Annotations

- 1 Annotation 1**
Recognises some other uses for the identified hardware or device
- 2 Annotation 2**
Names a variety of computer hardware or devices
- 3 Annotation 3**
Describes how they have used hardware or devices

Software

Name of software	What did this software help you do?	What else can this software help you do?
Powerpoint	I use it to make slides for my talk. I did it on the rocks in Hinton.	A game
Word	I use it to type my report on my interview with Nan. I put photos in it.	I can make a poster.
publisher	We used it for the class news letter.	Make cards for mothes day

Select the boxes (steps) and arrows below and drag them into the correct order to show how to upload this document to your personal folder.



Annotations

- 1 Annotation 1**
Recognises some alternative uses for the identified software
- 2 Annotation 2**
Describes in detail the purpose of the software
- 3 Annotation 3**
Names a variety of common software applications
- 4 Annotation 4**
Sequences the steps to save a file using the school's learning management system

Data project: Clean school

Sample summary

Students collected, collated and recorded data about rubbish in an assigned area of the school. They represented data as a series of graphs and on a map. They enhanced the map by adding images and a

key.

Achievement standard

Subject

Learning Area

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Data presentation

Digital 34 WS2 AB Watch later Share

PICTURE GRAPH — DAY 1

School rubbish collection data

Category	Value
Plastic	20
Paper	14
Food	15
Drink container	7
Other	3

Legend:
Red square = 20
Green triangle = 15
Purple circle = 7
Blue lightning bolt = 3

Digital project: Rapunzel

Sample summary

Students were presented with the problem of rescuing Rapunzel from the tower in 60 seconds. In teams, they designed, built and programmed a device that would allow the prince to safely rescue Rapunzel. They were asked to use tilt and motion sensors to control the device, use appropriate sounds and backgrounds, create a timer, and use simple engineering principles and systems. The device was expected to be sturdy, have at least three safety features and consider the user. Each team was asked to demonstrate their model to the class showing how they carried out the rescue and explaining the science, engineering and programming choices involved.

Achievement standard

Subject

Learning Area

By the end of Year 4, students describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. They explain how the same data sets can be represented in different ways.

Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. They explain how the solutions meet their purposes. They collect and manipulate different data when creating information and digital solutions. They safely use and manage information systems for identified needs using agreed protocols and describe how information systems are used.

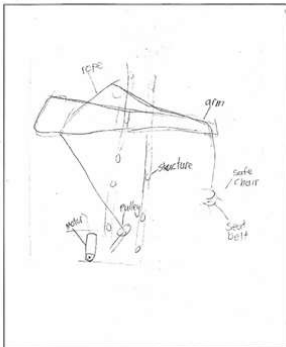
Rapunzel portfolio

Saving Rapunzel from the tower

Write the design brief in your own words using Word and insert into the document.

Rapunzel is in her tower. The prince wants to rescue her. The witch is coming. The prince has one minute to rescue her. We need to build and program a robot to rescue them.

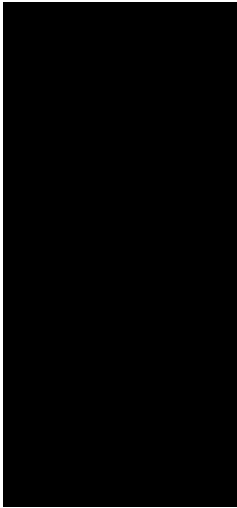
Draw and label your model (use pencil). Include the safety features, gears, pulley, motor, tilt sensor and motion sensor in your answer.



Annotations

- 1
Annotation 1
 Clearly defines the problem to be solved

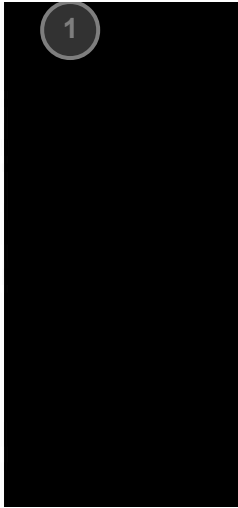
- 2
Annotation 2
 Draws a labelled diagram to describe key features of the robot



Explain how your model works. (Use the following words: gear, pulley, motor, tilt sensor, motion sensor and safety features).

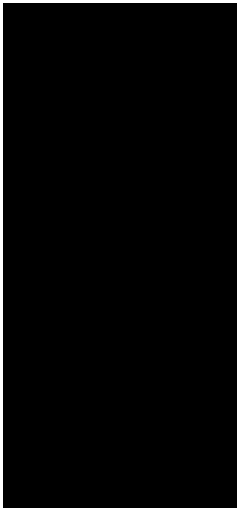
A motor drives a pulley that turns another pulley that has a rope attached which then goes over the motor. The rope has a seat attached which has a seat belt. One rope is fixed on the ground the other goes to Rapunzel's window. A motion sensor then detects when Rapunzel climbs over the seat and it will then stop so the robot can't use it.

We've didn't get so much but we're in a bit of a hurry.



Annotations

- 1 Annotation 1**
Explains how the robot works using technical words such as motor, pulley, motion sensor

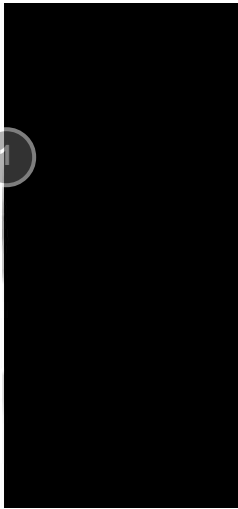


Insert an image of your program code and explain it.



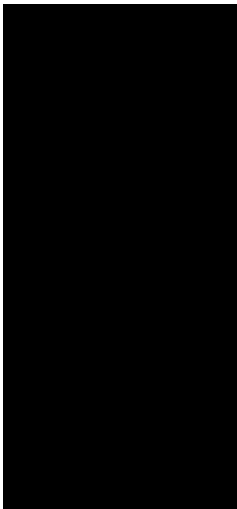
What did you like best about your model and how it works?

I like the idea that our robot can work like a real rescue robot. Although it is made of Lego. My favorite part is the sign that is connected to the seat because it will lower and lift and I explained how it worked up the box.



Annotations

- 1 Annotation 1**
Selects and describes sophisticated coding elements to program the robot
- 2 Annotation 2**
Captures a screen shot of the program code

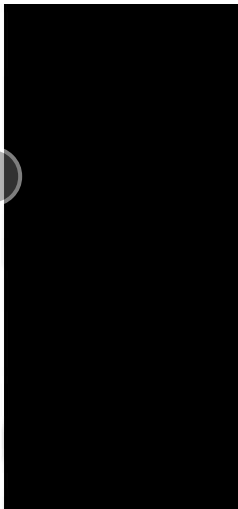


What did you find difficult about saving Rapunzel?

I found it hard because we didn't have enough time to finish our model because first we made a simple one and it was too simple so then we made a wheel one but the sensor would not get Rapunzel out in time then we tried.

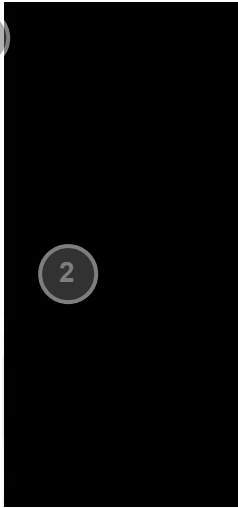
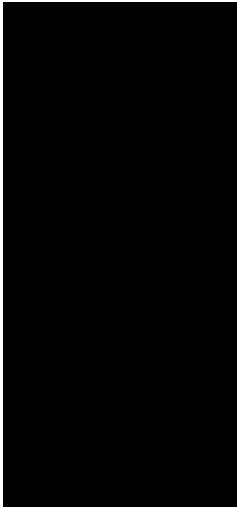
If you had more time how would you improve on your attempt to save Rapunzel?

We would finish our code. I also think we should of modified it to make it more complex so it would be the same size as our house. I would also make it safer and easier to climb and the program would not give the robot a motion sensor would wait for Rapunzel to climb on then it would lower her to the ground then the motor would turn off so Mrs. White couldn't be able to use it.



Annotations

- 1 Annotation 1**
Identifies improvements that could be made to the model



Annotations

1

Annotation 1
Uses a peripheral device (camera) to take three digital images. Crops the images and inserts them into the document

2

Annotation 2
Creates a robot (digital solution) that meets the identified problem and considers user input in its design